SYMONS'S

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WHIRLWIND AT YEOVIL, NOV. 17, 1883.

HAVING seen some descriptions in the London newspapers of a whirlwind near Yeovil, we wrote to the nearest rainfall observer (Mr. J. Curtis, of Hendford, Yeovil) asking him to favour us with as full an account as possible and also with a map showing the track passed over.

Thanks to his assistance and to that of his son, we believe that the following statement and the accompanying map may be implicitly relied upon.

The general trend of the track is from W. to E. but with a remarkable change to S. at Henford, and subsequently a sinuous path terminating in a circular or at any rate confused movement at Newton. There was no damage in the direct line from Henford to Newton.

In the early part of its course, *viz.*, from Brympton to Henford the heads of all trees were laid down to the E., but at Newton they were all in confusion, lying across each other.

Mr. Curtis remarks that several names are incorrectly spelled upon the map, but as it is an enlargement from the Ordnance sheet, we have thought it best to make the map and article agree, giving in the following list the corrections which should be made. Aldon, not *Alton;* Barwick, not *Berwick;* Braggchurch, not *Brackchurch*, Hendford, not *Henford;* Hewhill, not *Howell;* Placket, not *Pracket;* Pye Corner, not *Pyke Corner.*

As some persons may be sceptical respecting a four-wheel waggon half full of hay being lifted and carried about 30 yards, we refer them to *A lecture on the Storm in Wiltshire*, by G. A. Rowell, where they will find the precise details of a more remarkable case, that waggon being lifted clean over the top of a 12 ft. hedge. The Wiltshire waggon weighed 22 cwt. empty, and as it had hay in it, the weight was probably 23 cwt. or about 1,160 kilogrammes. The Wiltshire waggon was not turned round, but lifted broadside over

the hedge; the Yeovil one was carried rather further, and turned round during the process.

EXTRAORDINARY STORM.

ABOUT noon on Saturday, Nov. 17th, a fearful whirlwind passed over Somerset, causing great damage. It came from the West and passed in an easterly direction. In the village of *Brympton*, three miles from *Yeovil*, trees were uprooted and other damage was done. The splendid avenue of trees leading to *Brympton House* was thinned out, and branches were strewn in every direction. In the adjacent village of *Alvington* several cottages were unroofed, and the tiles and masonry carried some distance. The poor people were obliged to seek shelter elsewhere. Some outbuildings (at A) on a farm belonging to the Hon. Ponsonby Fane were much damaged, and the tiles and woodwork scattered in every direction. Many ricks were also uncovered. Passing along the valley towards *Yeovil*, the wind stripped trees of their branches, snapped others asunder, and levelled many with the ground. The force of the storm was, however, felt over a limited area only, for the course taken by the whirlwind is plainly marked by the fallen trees, the unroofed houses and hayricks, and the branches of trees which almost cover the ground. In front of Mr. H. S. Watts' residence in *Henford*, (B) several trees were snapped asunder and others uprooted. A grand old Chichester elm was laid low in an instant, and several tons of earth could be seen on Sunday still adhering to the roots. Messrs. Bradford's corn stores were stripped of the tiles, and in the timber yard, deals were blown about and broken like matchwood. In the coal yards near, two horses were thrown off their feet, but fortunately were not killed; while a cattle truck was driven on the line at a considerable speed. The trees in front of Mr. Murry's house (C) were broken off and carried across the road, one large limb breaking in Mr. Daley's shop front. A few yards below, a padlock attached to an iron gate was broken off, and the thick iron plate to which it was attached was snapped in two, as if a hard chisel had been used. Strange to say, some solid wooden gates near, on the same property, were not in the least injured. Some leadwork on the roof of the back premises, was, however, doubled up, and a fine tree snapped in two. A man who saw it says, "he shall never forget the sight; trees were bent in every direction; branches and leaves were scattered over the ground; and the noise was deafening. Had the storm lasted a few minutes instead of only a few seconds the damage would have been immense." The whirlwind, passing over *Henford*, caused some damage in *Alton* plantation; and one tree is particularly noticeable, having been stripped of every branch. At *Alton House* (D) a high Hamstone chimney was blown down, and fell through the roof, causing much damage in a bedroom. In the fields near, branches were stripped off the trees, ricks uncovered. and tiles blown off the roofs of outhouses. From *Alton* the wind sped across the valley separating *Nine Springs Hill* (E) from *Constitution Hill* (F) and in a lane on the top of the latter, near *Berwick House*, tipped over several trees. It then took a course towards *Summerhouse Hill*, the site of the Yeovil Corporation Waterworks supply reservoir, just missing the house (G). In the next field, however, it caught a four-wheel waggon, which was partly filled with hay, * and lifted it about 30 yards, turning it round during the process. About

* Another account says, "half full of hay."

half a ton of hay which had been placed on the ground for feeding sheep was blown entirely away. A patch of growing swedes was so pressed by the weight of the wind that they looked as if the leaves had been rolled. As a man was driving a cart along an adjacent lane the wind lifted out the tail-board and a shovel, the former being carried away so that it has not yet been found. Branches of trees fell in front and rear of this man, who was in a state of terror lest some might alight on him ; as it was, one piece just grazed the head of the horse. The wind then descended the hill over *Newton Copse*, where the exact width of the devastating current could be distinguished, and also where it seemed to have raged with the greatest fury.* The resistance to its course had not been hitherto particularly great, though everything in its way suffered. At this point there was more in its way. The wind appeared as if it pressed down the hill, scores of trees having their tops bent and crushed off, others falling prostrate in the direction the storm pursued, whilst many more were standing at all angles, partly uprooted. The road through *Newton Copse*, which leads to *Stopford*, *Yeovil Junction*, and other places, and is cut through soft sandstone, which rises on each side in some places 20 or 30 feet, was strewed with trees, and limbs of others. Several fell across the cutting, and made temporary bridges, whilst in one place the root of a large tree, which had slipped in its fall, actually overhung the road. Here the immense oak, elm, ash, and other trees were broken off like so much match wood, or uprooted with the greatest ease ; and no little time was occupied in clearing the road for traffic.

At the foot of the hill stand the farm buildings belonging to *Newton Farm*. Here the wind burst into the barn, and blew off a quantity of roofing. A horse and cart, which was being driven out of the farm-yard was struck by the gust, and the horse turned round. A fir tree near seemed to spin round and round like a top, but without falling, though some branches were torn off. The wind seems to have gone round and round this tree, twisting the branches and not disturbing the roots. From this point the wind appeared to take another course, and to rise in elevation. After proceeding about 150 yards, it lifted an elm tree out of the ground, and left it standing on its roots, as it did not fall for ten minutes after the whirlwind had passed. Then the tree crashed down on several apple trees in the orchard which it adjoined. Several other fruit trees in different parts appeared to have been lifted out of the ground. This mischief having been done, the wind passed on a considerable distance without doing any damage, the heaviest reported being at *Bradford Abbas*, about two miles off, where some trees are said to have been uprooted. Next it went to *Sherborne*, so it is reported, and did considerable damage.

Eye-witnesses of the phenomenon, as it passed round *Yeovil*, state that it occupied less than two minutes. Prior to the whirlwind, very heavy clouds caused an unusual darkness, and rain fell in torrents, but just before the passage of the wind the rain ceased somewhat, and the sky began to break. All round *Newton*, where there is much timber, the air was thick with leaves, blown from the trees, and lifted from the ground. The murky appearance of the atmosphere, the cracking of the trees, and the noise of the wind, caused no little fear in the minds of the labourers who were working in the fields near the places where the greatest havoc was done. The course of the whirlwind seemed to be sinuous, and easterly in direction.

* Another account gives the average breadth as 150 ft.

ROYAL METEOROLOGICAL SOCIETY.

AT the meeting on December 19th, 1883, Mr. J. K. Laughton, M.A., F.R.A.S., President, in the chair, the following were elected Fellows —viz., R. Bentley, W. Bonallo, Miss E. Brooke, Rev. A. Conder, T. H. Cowl, J. A. Westwood Oliver, C. M. Powell, W. B. Tripp, and Fung Yee, of the Chinese Embassy.

The papers read were:—"*On the Explanation of Certain Weather Prognostics*," by the Hon. Ralph Abercromby, F.R.Met.Soc. The author explains about forty well-known prognostics belonging to the following groups — 1, Diurnal; 2, sun, moon, and stars; 3, sky; 4, rain, snow, and hail; and 5, wells, springs, and coal mines, by referring them to the isobaric conditions in which they are observed. By this means he is able to indicate the circumstances under which any prognostic fails, as well as those under which it succeeds.

This paper is so interesting that we strongly urge all who are interested in Meteorology (and are not as Fellows of the Royal Meteorological Society entitled to receive the publications of the Society) to obtain a copy when it is published in the Society's Quarterly Journal. The paper will probably occupy twenty or more pages, and their interest may be gathered from the following reprint of the shortest section:—

4. RAIN, SNOW, HAIL.

"Rain with a South-east wind is expected to last for some time."

This prognostic means that if in this country rain sets in with a South-east wind, it may be expected to last longer than rain with a Southerly or Westerly wind. The greater portion of British rain falls with cyclones moving freely towards the East, and in them, as a rule, there is not much South-east wind. Sometimes, however, when the intensity is very great, there is a strong South-east gale in front of such a cyclone, and then the prognostic fails.

There is a not uncommon type of weather, which may be called the Easterly type, in which the presence of a persistent anticyclone over Scandinavia prevents the free passage of cyclones coming in from the Atlantic; they are then arrested in their course, and brood over Great Britain for a day or two without making much eastward progress. Under these circumstances a South-east wind is strongly developed, and the rainy portion of the cyclone never moving on, the rain which belongs to it continues without intermission. The prognostic then holds good, but is, for the reason above-mentioned, subject to frequent failure.

"Short slight showers during dry weather are called a hardening of the drought."

The author has never heard this saying applied practically, but it seems to suggest the slight rain which sometimes occurs in a well-defined anticyclone. This rain is due to the formation of a small short-lived secondary, and is not associated with any tendency of the anticyclone to break up.

If this is the case, continued dry weather would be indicated, and the prognostic fully justified.

"When after a snow shower, the sky clears up quickly, but is again overcome with another shower, this is said to be a 'feeding storm.'"

In such a case the air always feels cold. The forms of the flakes of snow are pretty correct indications of the amount of the fall to be expected. When they are broad and large, and fall slowly, there will not be much, and the probability is that a thaw will soon follow. Should the flakes be spicular, and fall very fast and thick, then a heavy fall or a "lying storm" may be expected, and this last sort of fall is always accompanied by a firm breeze of wind from North-east to South-east.

The wording of this saying is self-explanatory. The whole owes its value to the fact that a long spell of cold weather, which would make snow lie, is usually associated with a North-east or East wind. A spell of these winds often begins with showers, and the dryness associated with them makes the snow flakes fine or spicular, so that they fall fast.

Snow with large broad flakes, falling slowly, is usually associated with the cold West or North-west winds in rear of a cyclone, which rarely last long. Exceptions to this saying frequently occur in the endless phases of the conflict between cyclones coming in from the Atlantic and Scandinavian anticyclones, but still it is a tolerably good prognostic.

"Fresh snow.
Fresh cold."

The idea meant to be conveyed by this saying is, that if during a period of cold weather fresh snow falls, it is the prelude of continued cold weather, not of a thaw.

The explanation depends on the principle that most weather comes in persistent spells, associated with persistent types of pressure distribution. In this country long frosts occur, with both of the so-called Northerly or Easterly types, and this saying holds good when it happens during persistent spells of either of them. On the other hand, an incoming cyclone of the Easterly type, which gives fresh snow, sometimes passes so far to the East, that Westerly winds and warmer weather set in later, and then the prognostic fails. On the whole, however, it is a good one, especially in the North of England and in Scotland.*

"Hail
Brings frost in the tail."

This may be conveniently considered with the allied saying,

"Hail after long continued rain, indicates a clearing up."

The latter holds good when, after the driving rain of a cyclone front, the weather begins to break into squalls with hail, either during or after the passage of the "trough." It is thus symptomatic of the rear of a cyclone, and, therefore, of a clearing up at any season of the year.

Then as to frost following in winter. Hail is more likely than rain to fall in rear of a cyclone when the pressure is rather high to the Westward of Great Britain, in that case the cyclone is usually followed by a large wedge, which in winter would be associated with a white frost of short duration. On one occasion the author observed hail associated with some small secondaries which accompanied the replacement of the Westerly by the Easterly type of weather

* Full details of weather types and their nature will be found in a paper by the author, "On certain types of British Weather," *Quarterly Journal*, Vol. IX., p. 1.

in the month of January. The frost which followed was then of longer duration. On the whole these prognostics are tolerably good, the latter being the best.

The other papers read at the meeting were—"*Preliminary Inquiry into the Causes of the Variations in the Reading of Black-bulb Thermometers in vacuo*," by G. M. Whipple, B.Sc., F.R.Met.Soc. It has long been known that there is a want of accordance between the different instruments used for measuring the intensity of solar radiation; and with a view of ascertaining the cause of the variations in the readings of the black-bulb thermometers *in vacuo*, the author has made a comparison with a number of these thermometers, the results of which are given in the paper. It is shown distinctly that the effect of an increased coating of lamp-black on the bulb is to raise the temperature, and also that the size of the thermometer bulb is a most important factor in the case of this instrument.—"*Report on the Phenological Observations for* 1883," by the Rev. T. A. Preston, M.A., F.R.Met.Soc. Mr. J. S. Dyason, F.R.Met.Soc., exhibited a series of coloured sketches illustrating the recent atmospheric phenomena during November and December.

THE GALE OF DECEMBER 11TH & 12TH.

To the Editor of the Meteorological Magazine.

SIR,—The extraordinary movements of the barometer during the progress of this memorable gale may be worthy of notice. Up to 5 p.m. on the 11th the mercury had been rising, when it began to fall, at first slowly, but afterwards with great rapidity. Between 6.15 p.m. and 10 p.m. there was a fall of 0·570 in. [this gives the unusual rate of 0·152 in. per hour—ED.], and a further fall of 0·201 in. before 2 a.m. on the 12th, when the barometer reached its minimum, the corrected pressure at that hour being 28·729 in. The recovery of pressure was equally sudden and remarkable. Seven hours later (9 a.m. on the 12th), the corrected reading was 29·563 in., showing a rise of 0·834 in. [0·119 in. per hour.—ED.]

It was generally agreed that no storm has been experienced for the last 40 years to equal this in fury.

THOS. G. BENN.

Newton-Reigny, Penrith, 3rd January, 1884.

SUPPLEMENTARY TABLE OF RAINFALL, DECEMBER, 1883.

[For the Counties, Latitudes, and Longitudes of most of these Stations, see *Met. Mag.*, Vol. XIV., pp. 10 & 11.]

Div.	STATION.	Total Rain.	Div.	STATION.	Total Rain.
		in.			in.
II.	Dorking, Abinger	·63	XI.	Llanfrechfa Grange ...	1·13
,,	Margate, Birchington...	1·62	,,	Llandovery	3·67
,,	Littlehampton	1·22	,,	Solva	2·17
,,	St. Leonards	1·45	,,	Castle Malgwyn	2·59
,,	Hailsham	1·42	,,	Rhayader, Nantgwillt..	6·26
,,	I. of W., St. Lawrence.	1·20	,,	Carno, Tybrith	5·05
,,	Alton, Ashdell.....	1·32	,,	Corwen, Rhug	2·76
III.	Winslow, Addington ...	·83	,,	Port Madoc	4·64
,,	Oxford, Magdalen Col...	·54	,,	I. of Man, Douglas	3·57
,,	Northampton	·70	XII.	Carsphairn	...
,,	Cambridge, Beech Ho...	1·25	,,	Melrose, Abbey Gate ..	1·30
IV.	Southend	·91	XIII.	N. Esk Res. [Penicuick]	2·60
,,	Harlow, Sheering ..	·76	XIV.	Ayr, Cassillis House ..	5·38
,,	Diss	2·16	..	Glasgow, Queen's Park.	4·30
,,	Swaffham	2·17	XV.	Islay, Gruinart School..	4·91
,,	Hindringham	2 38	XVI.	St.Andrews,NewtonBk	1·60
V.	Salisbury, Alderbury...	·88	,,	Aberfeldy H.R.S.	2·72
,,	Warminster	1·00	,,	Dalnaspidal H.R.S. ...	5·81
,,	Calne, Compton Bassett	1·00	XVII.	Keith H.R.S.	2·61
,,	Beaminster Vicarage ...	·77	XVIII.	Forres H.R.S.	2·07
,,	Ashburton, Holne Vic..	2·41	,,	Strome Ferry H.R.S....	10·91
,,	Torrington, Langtree W.	...	,,	Lochbroom	7·87
,,	Lynmouth, Glenthorne.	2·40	,,	Tain, Springfield.....	3·04
,,	Probus, Lamellyn	1·64	,,	Loch Shiel, Glenaladale	18·10
,,	Taunton, Fullands	·95	XIX.	Lairg H.R.S.	3·09
VI.	Bristol, Clifton	1·49	,,	Forsinard H.R.S.	4·93
,,	Ross	·64	,,	Watten H.R.S.	3·67
,,	Wem, Sansaw Hall.....	1·00	XX.	Fermoy, Glenville	1·78
,,	Cheadle, The Heath Ho.	1·72	,,	Tralee, Castlemorris ...	2·91
,,	Worcester, Diglis Lock	·62	,,	Tipperary, Henry Street	2·16
,,	Coventry, Coundon	1·07	,,	Newcastle West	2·07
VII.	Melton, Coston	·85	,,	Kilrush	...
,,	Ketton Hall [Stamford]	1·20	,,	Corofin	1·45
,,	Horncastle, Bucknall ...	1·48	XXI.	Carlow, Browne's Hill..	1·36
,,	Mansfield, St. John's St.	1·49	,,	Navan, Balrath	1·81
VIII.	Macclesfield, The Park.	2·66	,,	Athlone, Twyford	2·20
,,	Walton-on-the-Hill... ..	1·66	XXII.	Mullingar, Belvedere ...	2·10
,,	Lancaster, South Road.	...	,,	Clifden, Kylemore	12·12
,,	Broughton-in-Furness ..	5·98	,,	Crossmolina, Enniscoe..	3·77
IX.	Wakefield, Stanley Vic.	·84	,,	Carrick-on-Shannon ...	2·29
,,	Ripon, Mickley	1·14	XXIII.	Dowra	...
,,	Scarborough.....	2·19	,,	Rockcorry.....	2·40
,,	EastLayton[Darlington]	·91	,,	Warrenpoint	2·08
,,	Middleton, Mickleton ..	4·09	,,	Newtownards	1·54
X.	Haltwhistle, Unthank..	3·39	,,	Belfast, New Barnsley .	2·75
,,	Shap, Copy Hill	3·95	,,	Bushmills	3·12
			,,	Buncrana	4·08

DECEMBER, 1883.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1870–9	Greatest Fall in 24 hours. Dpth	Date.	Days on which ·01 or more fell.	TEMPERATURE. Max. Deg.	Date	Min. Deg.	Date	No. of Nights below 32° In shade	On grass.
			inches	inches.	in.								
I.	ENGLAND.	London (Camden Square) ...	·75	— 1·42	·45	10	14	54·9	13	28·3	7	3	12
II.		Maidstone (Hunton Court)...	1·26	— 1·14	·45	7	13	...	...	...	...	...	...
,,		Strathfield Turgiss	·52	— 1·50	·18	10	14	54·4	13	26·4	6	8	22
III.		Hitchin	·93	— 1·12	·28	10	17	51·0	14	26·0	6,7	12	...
,,		Banbury	·74	— 1·41	·25	15	15	54·0	14	26·0	7	11	...
IV.		Bury St. Edmunds (Culford)	2·40	+ ·25	·37	3, 10	19	54·0	14*d*	26·0	6	11	...
,,		Norwich (Cossey)	2·80	— ·48	·44	5	19	57·0	13	28·0	8	4	5
V.		Bridport	·91	...	·24	15	10	...	..	...	...	...	...
,,		Barnstaple.....	2·91	— ·85	·75	10	16	56·0	1	29·5	8	...	...
,,		Bodmin	1·56	— 3·89	·36	10	22	52·0	14	28·0	7	2	11
VI.		Cirencester	2·54	— ·07	1·12	1	12	..		...	...	...	...
,,		ChurchStretton(Woolstaston)	1·63	— 1·16	·70	10	14	52·0	24	26·0	7	10	11
,,		Tenbury (Orleton)	·67	— 1·84	·28	10	13	55·5	14*e*	25·8	8	4	10
VII.		Leicester	1·02	...	·22	10	22	53·4	13	26·8	7	5	10
,,		Boston	1·06	— 1·01	·16	16	19	54·0	13	31·0	8	3	...
,,		Grimsby (Killingholme).....	1·96	— ·47	·33	16	25	53·0	14	30·5	8	1	...
,,		Hesley Hall [Tickhill].....	1·01	...	·29	16	18	56·0	13	30·0	8	5	..
VIII.		Manchester (Ardwick).....	3·18	+ ·65	·74	10	14	49·0	2*f*	26·0	7	8	...
IX.		Wetherby (Ribston Hall) ...	1·74	— ·47	·36	1, 16	10	...	...	...	...	...	...
,,		Skipton (Arncliffe)	5·51	+ ·23	1·27	10	21	51·0	13	24·0	7	...	...
X.		North Shields	2·38	— ·71	·75	15	14	55·8	13	29·2	8	8	11
,,		Borrowdale (Seathwaite).....	14·92	+ 1·19	3·43	10	22	53·9	13	22·0	7	3	...
XI.	WALES.	Cardiff (Ely).....	2·22	— 1·69	·59	10	15	...	...	...	...	...	...
,,		Haverfordwest	2·92	— 2·21	·45	9, 10	21	53·5	13	26·5	7	2	11
,,		Plinlimmon (Cwmsymlog) ...	5·44	...	1·43	10	18	...	...	...	...	...	...
,,		Llandudno.....	2·12	— ·73	·76	10	14	...	...	...	...	...	...
XII.	SCOTLAND.	Cargen [Dumfries]	3·13	— 1·40	·62	10	18	52·8	13	24·0	7	5	...
,,		Hawick	1·83	— 1·03	·44	21	13	...	...	..	...	...	...
XIV.		Douglas Castle (Newmains)	4·25	+ ·16	1·04	11	18	...	...	...	...	...	...
XV.		Lochgilphead (Kilmory).....	9·61	+ 3·43	1·25	10	23	...	...	...	...	...	...
,,		Appin (Airds)	7·63	...	...	...	...	...	...	...	...	...	...
,,		Mull (Quinish).....	9·09	...	·96	12	25	...	...	...	..	...	...
XVI.		Loch Leven Sluices	2·70	— ·96	·60	12	10	...	...	...	...	...	...
,,		Arbroath	1·37	— 1·53	·41	22	9	50·0	24	27·0	8	12	...
XVII.		Braemar	2·23	— 1·20	·42	12*a*	19	47·2	13	20·8	5	18	30
,,		Aberdeen	2·39	...	·42	11	19	54·0	13*e*	25·0	7	13	...
XVIII		Skye (Sligachan)	16·63	...	2·80	29	23	...	...	...	...	...	...
,,		Culloden	2·46	+ ·62	·34	13*b*	11	52·8	24	30·2	6	6	25
XIX.		Dunrobin	4·91	...	·84	2	19	...	...	...	...	...	...
,,		Orkney (Sandwick)..... ..	...	...	...	...	...	...	...	...	...	...	...
XX.	IRELAND.	Cork (Blackrock)	1·48	— 3·28	·36	30	9	...	...	...	...	...	..
,,		Dromore Castle	4·64	...	1·53	13	15	58·0	26	29·0	30	6	...
,,		Waterford (Brook Lodge) ...	1·20	...	·29	27	13	54·0	3, 13	22·0	8	9	..
,,		Killaloe	3·35	...	·76	10	17	55·0	28	20·0	7	10	...
XXI.		Portarlington	1·40	— 1·46	·47	10	17	53·0	28	27·0	6	10	...
,,		Dublin (FitzWilliam Square)	1·26	— 1·32	·53	10	13	55·0	14	30·2	7	5	11
XXII.		Ballinasloe	2·17	— 1·31	·66	10	18	50·0	28	22·0	7	12	...
XXIII.		Waringstown	1·71	— 1·25	·26	10*c*	21	55·0	13	24·0	6,7	11	18
,,		Londonderry (Creggan Res.).	4·06	...	·43	10	25	...	...	...	...	...	...
,,		Omagh (Edenfel)	3·16	— ·24	·47	10	23	57·0	2, 31	29·0	16*g*	11	...

+ Shows that the fall was above the average ; — that it was below it.

a And 23. *b* And 22. *c* And 13. *d* And 15. *e* And 24. *f* And 12, 22. *g* And 26.

METEOROLOGICAL NOTES ON DECEMBER.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min for Minimum; T for Thunder; L for Lightning; T S for Thunderstorm; R for Rain H for Hail S for Snow.

ENGLAND.

STRATHFIELD TURGISS.—The open weather continued to the end of the year, closing one of the most remarkable seasons ever recorded here. Young wheat crop and all autumn sown crops stand exceedingly well; a great number of wild flowers abnormally in bloom, in consequence of the mildness of the season.

BANBURY.—Mean temp. 40°; mean pressure 30·153 in.; high wind on 9 days; fog on 7 days; S on 6th and 16th, dropping mist on 13th, 30th, and 31st.

CULFORD.—The month commenced somewhat wintry, and there was but little sunshine throughout; mean temp. 39°·9; stormy, with deep S on 6th, and hurricane on 11th.

BODMIN.—Mean temp. 41°·8; mean pressure the highest recorded during 34 years; rainfall the smallest recorded in December, and never before has the month passed with so little wind.

CIRENCESTER.—An unusually dry, mild month.

WOOLSTASTON.—A sharp spell of cold weather was followed by a severe gale on the 11th and 12th, which did much damage in this neighbourhood; the latter half of the month was unusually warm and mild; mean temp. 39°·1; S on 5th. The remarkable chromatic effects in the sky at sunrise and sunset, were truly magnificent during the greater part of the month, especially at sunset on the 4th, when the moon appeared a bright green colour.

ORLETON.—The rainfall was very slight, being little more than one-fourth of the average, and the fluctuations in temp. were less than usual; there were frosts on many mornings till the 10th, but very few afterwards. The sky was generally cloudy, with a few bright days till the 24th, after which it was very cloudy and foggy; mean temp. of the month was about 2°·5 above the average of 20 years, and the bar. was generally high and steady. The yellow light before sunrise and after sunset, was visible every time that the sky was clear, and frequently appeared through clouds and fog.

LEICESTER.—The month was very mild, with little R, and S on only two days; the end of the month was misty and damp; a very high wind on the night of the 11th did much damage.

BOSTON.—Very heavy gale of wind on the 11th, with T and L. The sunsets throughout the month were very remarkable, and of a most brilliant character.

KILLINGHOLME.—The month was wet, few days without R, but no great fall; fog and very dull skies at the close; destructive storm at night on 11th, and in early morn of 12th. There was an unusual glow before sunrise on two or three mornings towards the end of the month, especially on 24th.

ARDWICK.—The month began with a show of frost, but it soon disappeared; on 11th, a terrific storm of wind occurred during the night, the gusts were intermittent and did a large amount of damage; seven persons were killed in different parts of the city by the fall of chimney stacks, &c. Towards the close of the month the weather became misty and damp, and the temp. high for the season.

SEATHWAITE.—The wind which passed over Seathwaite, on the night of 11th and early morning of 12th, did much damage to both plant and property. Hundreds of trees were blown down in Borrowdale—including the famous yews, one was torn up by the roots and the other three were left almost bare, little more than the trunks being left—slates, and in some cases whole roofs, were carried away; S on hills, on 15th and 22nd.

WALES.

HAVERFORDWEST.—This month was characterized by uniform mildness, nearly constant damp, gloom, and fog; but on the few evenings that were clear, the sunsets were gorgeous, every variety of colour blending indescribably. A

sudden and very sharp frost set in on the night of 6th, disappearing as suddenly on 9th. The wind blew with great force on the 10th, 11th, 12th and 13th, to 15th; the weather was then fine and cold to the 18th, from which time, to the end of the month, constant fog, excessive gloom and drizzling R prevailed, the sun never once visible.

SCOTLAND.

CARGEN.—An exceedingly dull, gloomy month, only 31 hours of sunshine, the average being 61 hours; mean temp. 2° above the average; the bar. on several occasions was remarkably high; mean pressure 30·003 in. A very severe storm occurred on the night of the 11th—12th; it reached its greatest force between 1 a.m. and 2 a.m., and was accompanied by T and L; immense damage was done to trees and plantations in the district, thousands of acres of plantation being completely levelled, and thousands of the finest trees uprooted.

HAWICK.—The month was most remarkably mild, and so free from frost, that the East Lothian stock was in beautiful bloom. A hurricane occurred on the 11th, which overthrew trees and some houses here.

KILMORY.—An exceptionally severe gale blew on the night of December 11th and following morning; judging by its effect on trees in this neighbourhood, it would appear that its greatest force here far exceeded that of the Tay Bridge storm, or indeed of anything in the present generation; the worst was early on the morning of the 12th, when the wind shifted more to N. of W., the effect in the blowing down of hardwood trees which do not generally suffer much, was most remarkable, roots as thick as a heavy man's thigh snapped off; also spruce, and silver fir stems, two or three feet diameter broken off short some distance above ground.

ABERDEEN.—The weather was open and mild for the season; there was no quantity of S, and the rainfall was an inch below the average; a heavy W. gale occurred in the early morning of the 12th; aurora seen on 1st and 18th. The most notable phenomena during the month were the gorgeous sunrises and sunsets.

CULLODEN.—The closing month of the year was remarkably mild, frost only on 6 days; the severe gale experienced elsewhere was somewhat less felt here.

IRELAND.

DROMORE CASTLE.—A fine open month, fairly dry, without any great cold.

WATERFORD, BROOK LODGE.—Rainfall less than half the average; S on Comeragh Mountains on 16th; heavy N.W. gale on 11th.

KILLALOE.—Excepting a few nights' sharp frost in the first week of the month, the weather was generally mild; mean temp. 41°·6 above the average, rainfall about the average

WARINGSTOWN.—The month was dry and mild; a very heavy gale occurred on the night of the 11th, doing great damage to timber, &c.

ABSENCE OF SUNSHINE.

The remarkable absence of sun that has been experienced of late has been the reverse of favourable to early forcing operations. In the meteorological report issued last Monday from the Greenwich Observatory, it is stated that the sun re-appeared on Sunday the 6th Jan. for the first time since the 23rd Dec. The maximum temperature in the metropolis on the same day was 51°.—*Journal of Horticulture.*

THE SUNSETS AND THE JAVA EARTHQUAKE.

We do not, at present, offer any further remarks upon this subject; for although the literature upon it is becoming very extensive, we have not yet seen any fact recorded that is not consistent with the view we adopted at the very first—that the whole appearances are due to the dust thrown up in Sunda Straits—but if we do see any other reasonable explanation, it shall be duly quoted in these pages.

We have, at present, room only for the two following letters :—

PINK SEMICIRCLE OPPOSITE THE SUN.

To the Editor of the Meteorological Magazine.

SIR,—There is one striking phenomenon of the remarkable sunrises and sunsets which I have been very much surprised not to see mentioned, and yet it is a phenomenon I never saw before they began. I allude to a great pink semi-circle opposite the sun, which is at its best about twenty minutes before sunrise and after sunset. It does not last many minutes at each time, which may be the reason it has not attracted so much notice as the wide pink ring round the sun or moon, which is much less conspicuous, and doubtless arises from the same cause, for it, also, I never saw before. It has been more or less visible each morning that the sky has been clear enough, ever since the strange sunsets began. I have not seen it so often in the evening. I first noticed it on the morning of November 27th. It consists of the upper half of a very broad bright ring, whose outer radius is perhaps 25°, and inner about half that; it is more or less pink, sometimes a deep pink, but sometimes the inner half is white. Its edges are indefinite. The space within is darker, and always more or less blue. The centre seems just opposite the sun.

I would ask your readers whether this phenomenon is of frequent occurrence, for though I never saw it before, I am aware that this is no actual proof that it does not often occur; for it is much easier to see a phenomenon again, than to discover it. But if, as I believe, it is a phenomenon connected with the sunrises and sunsets, it is to my mind more striking and characteristic than any other of their features, which makes it the more strange that it has been so little observed. I suppose, also, that if any one has sufficient optical knowledge, it should throw much light on the cause of the fine sunrises, &c.—Yours truly,

THOS. WM. BACKHOUSE.

Sunderland, 11th January, 1884.

P.S.—I found yesterday afternoon, and again this morning and afternoon, that the semicircle is visible, though very faintly, when the sun is above the horizon; but there appears to be an interval, about sunrise and sunset, when it disappears entirely. This morning it was distinctly visible from 8.48 to 8.58, and had a slight pink tinge, the interior being blue as usual. It then gradually faded, but at 9.45 was still faintly visible, and nearly white as compared with the neighbouring sky.—T. W. B., *Jan. 12th.*

THE SUNSETS IN SHETLAND.

To the Editor of the Meteorological Magazine.

SIR,—I wrote you on Monday, and sent the rainfall for 1883, but I made no remarks on the season, because this was my first year of observation. It strikes me that I might have told you that the strange appearance of the atmosphere which has lately been noticed and remarked on in the south, has been equally observable here. Red sunsets used to be very common with us, and generally indicated good weather. Red in the morning, again, was a sure precursor of a heavy gale of wind before night. This season, *i.e.*, during the past part of the winter, red mornings have been very prevalent, but they have not been followed by the usual rough weather. The red, however, that has been observed this season is of quite a different tinge from what used to be. It lacks the bright scarlet tinge, and partakes largely of an orange colour. But, in fact, I have noticed the clouds in the evening assuming colours which I never saw them have before, viz., a deep sea green, such as you may have noticed on fresh water slime in stagnant or rotten pools in summer.

Yesterday about 4 p.m. the sky from the W. to the S.E. was all a very deep sea green, and the moon actually appeared green, or rather like a linen sheet, deeply tinged with laundry blue. Whatever the cause may be, the appearance is quite abnormal. I have seen nothing like it during forty years. I may notice that it has no connection with the aurora borealis. This season has been marked rather for the absence of aurora borealis.—Yours truly,

JAMES IRVINE.

Public School, Olnafirth, Voe Delting, Lerwick, January 2nd, 1884.

SEVERE FROST IN AMERICA.

PHILADELPHIA, JAN. 6TH, 1884.

An intensely cold wave is moving eastwards across the Continent. The mercury is already reported to be 24° below zero in Nebraska and Iowa, 48° below at Jamestown, Dakota, 39° at Bismarck, and 45° in Manitoba. As the wave is moving eastwards, the glass has now recorded 27° below zero at Cincinnati, 14° below at Cleveland, and 20° below at Chicago, where the air is filled with frost, and the intense cold has broken many large plate glass windows.

The cold was preceded in the north-west by heavy snows, which have blocked the railways and impeded the traffic. Many of the cattle and hogs in the snow-bound trains were frozen to death.

The cold wave had reached the Atlantic seaboard last night, the mercury falling to below zero universally in the northern States, and also as far south as Tennessee. At Chattanooga it was 2° below.

In several places serious fires have occurred, which were with difficulty got under, for the extreme cold hindered the firemen's operations by causing the engines to work badly. There were several fires in Chicago last night, and others in Cincinnati. The firemen were covered with ice while they were working. Several fires are reported to have broken out at Cleveland, where the Park Theatre, together with some adjoining buildings, has been burnt down, the loss amounting to $300,000.

END OF VOL. XVIII.